

## ML6161E3/ML6661E3/ML7161E3

Damper Actuators 5Nm for Modulating-, Floating-, and ON/OFF-Control

### SPECIFICATION DATA



### FEATURES

- Mounts directly on round and square damper shafts
- Freely-adjustable stroke limiter
- Declutch for manual adjustment
- Synchronous timing
- Magnetic coupling eliminates mechanical stops
- IP54 auxiliary switches
- Position indicator

### GENERAL

These direct coupled damper actuators provide modulating or floating control for:

- air dampers
- ventilation flaps
- louvers
- air handlers
- VAV units
- with normal torque of 5 Nm for damper areas up to 0.8 m<sup>2</sup>
- ideal for modulating three-position controllers

### SPECIFICATIONS

Supply voltage	24 V / 230 V; 50/60 Hz
<b>Ambient limits</b>	
Ambient operating limits	-40...+60 °C
Ambient storage limits	-35...+65 °C
Relative humidity	5...95%, non-condensing
<b>Mounting on damper shafts</b>	
round	8...16 mm
square	6...12 mm
minimum shaft length	20 mm
Protection class	IP54
Life repositions	10 <sup>5</sup> cycles
Torque rating	5 Nm
Dimensions	see Fig. 6 on page 5
Weight	0.48 kg

## OPERATION / FUNCTIONS

### Rotary Movement (floating)

The actuators rotational movement (clockwise or counter-clockwise) depends on the electrical control. As soon as the as the operating voltage 24 Vac or 230 Vac is applied, the actuator starts to turn.

### Rotary Movement (modulating)

- The actuators rotational movement direction (cw or ccw) can be selected using the DIL switch for rotational direction.
- As soon as the device receives an input signal (>0V), the actuator moves toward 90°. As long as the control signal is constant, the actuator remains in its current position.
- When the control signal is interrupted, but operating voltage is still supplied, the actuator returns to the "0" position of the selected direction of movement.
- On operating voltage failure, the actuator remains in its current position.

### Three-Position Control

The connected damper can be operated as follows via the respective actuator control:

- Damper opens (0...90°)
- Damper closes (90...0°)

With no power applied, the damper remains in the respective position.

### Position Indication

The position indicator (5) inserted in the housing coupling bushing indicates the rotational angle position of the air damper.

### Manual Adjustment

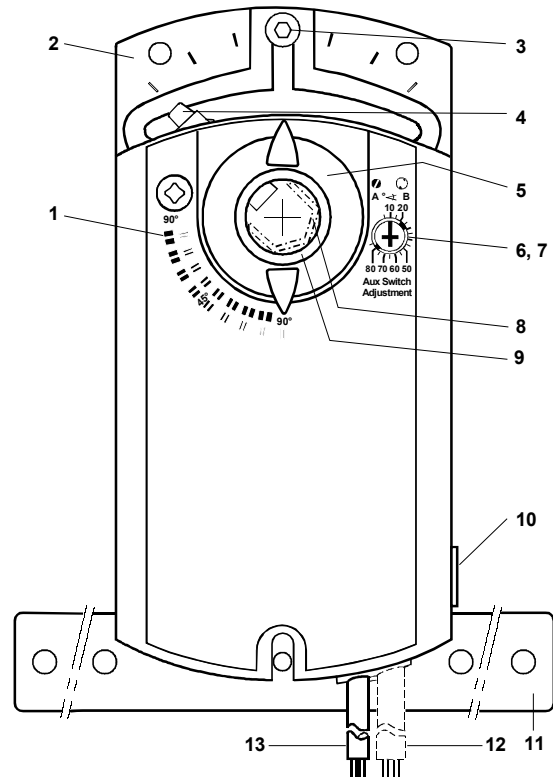
When no voltage is supplied, you can disengage the gear train and manually adjust actuator or the air damper by means of the red slider (10).

### Mechanical Limitation of Rotation Angle

The rotation angle can be limited stepless between 0 and 90°.

### Type Range

Order Number	Control Signal	Supply Voltage	Auxiliary Switches	Power Consumption
ML6161E3011	Floating	24 Vac	-	2 VA
ML6161E3029	Floating	24 Vac	2	2 VA
ML6661E3010	Floating	230 Vac	-	2 VA
ML6661E3028	Floating	230 Vac	2	2 VA
ML7161E3010	0...10 Vdc	24 Vac	-	3 VA
ML7161E3028	0...10 Vdc	24 Vac	2	3 VA



- 1 Rotational angle scales 0°...90° / 90°...0°
- 2 Base plate and housing
- 3 Adjusting screw for rotational angle rotation
- 4 Adjustment lever with shaft fastening screw
- 5 Position indicator
- 6, 7 Setting shafts for auxiliary switches A and B
- 8 Centering element
- 9 Coupling bushing
- 10 Slider to disengage the gear train
- 11 Mounting bracket
- 12 Connecting cable for auxiliary switches or potentiometer
- 13 Connecting cable for power and position signal

Fig. 1. Setting units and control elements

## INSTALLATION

The actuator is designed for single point mounting. The mounting instructions are enclosed with the actuator.

### Mounting Instructions

All information and steps to properly prepare and mount the actuator are listed in the Mounting Instruction Guide supplied with the actuator. Both position indicator and mounting bracket are delivered separately.

### Mounting Position

Choose the actuators mounting position so that you can easily access the cables as well as the setting shafts on the actuator front. Refer to "Dimensions".

### Mounting Bracket

When you mount the actuator directly on the damper shaft, use the mounting bracket.

The pivot must have sufficient working depth in the base plate and sufficient play toward the shaft center, especially for smaller shaft diameters that cause greater electric movement.

### Centering Element

To ensure a friction-locked connection at a shaft diameter of 8...10mm, install the supplied centering element between the damper shaft and the coupling bushing as per the mounting instructions.

## AUXILIARY SWITCHES

The auxiliary switches have the following factory settings:

Switch A: Switching point at 5°

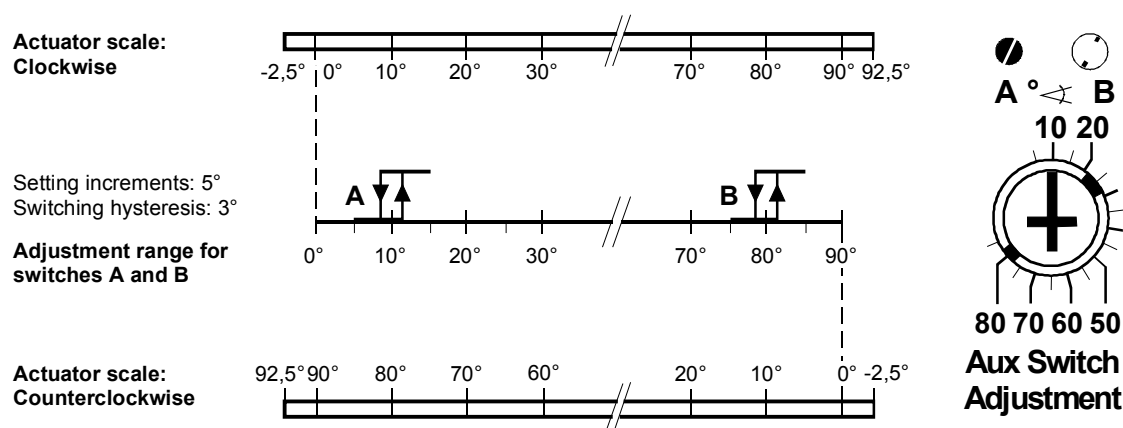
Switch B: Switching point at 85°

The settings for A and B can set to the desired values using the setting shafts.

**NOTE:** The angle values are valid only for the "0°" actuator position (clockwise direction)

### Adjustable Auxiliary Switches (type-specific)

The illustration below shows the adjustable switching values for auxiliary switches A and B in relation to the rotational angle



**NOTE:** The setting shaft for the auxiliary switches turn together with the actuator. The scales are valid only for the zero position of the actuator on clockwise movement

## WIRING

### ML6161E3011/ML6161E3029

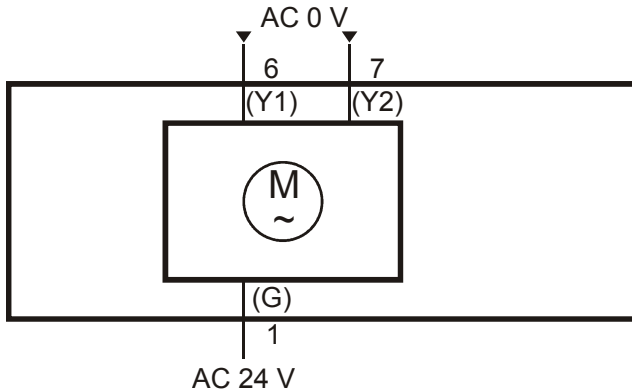


Fig. 2. Wiring diagram for ML6161E3011/ML6161E3029

Table 1. Wiring of ML6161E3011/ML6161E3029

Cable	No.	Color	Name
actuator 24 Vac	1	red	system potential 24 Vac
	6	purple	control signal 24 Vac (0 V), cw
	7	orange	control signal 24 Vac (0 V), ccw

### ML6661E3010/ML6661E3028

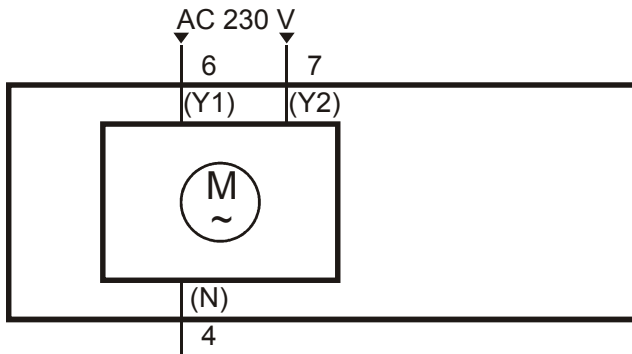


Fig. 3. Wiring diagram for ML6661E3010/ML6661E3028

Table 2. Wiring of ML6661E3010/ML6661E3028

Cable	No.	Color	Name
actuator 230 Vac	4	blue	neutral conductor
	6	black	control signal 230 Vac (0 V), cw
	7	white	control signal 230 Vac (0 V), ccw

### ML7161E3010/ML7161E3028

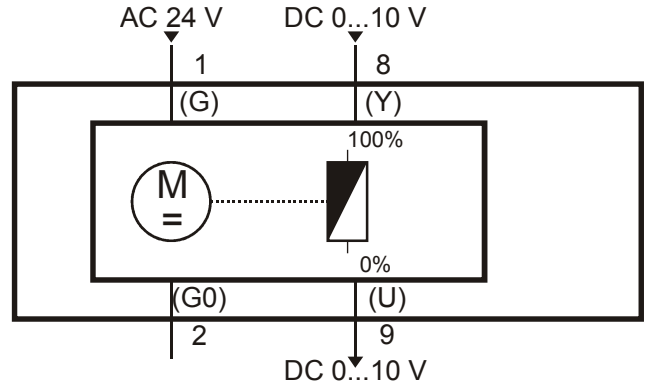


Fig. 4. Wiring diagram for ML7161E3010/ML7161E3028

Table 3. Wiring of ML7161E3010/ML7161E3028

Cable	No.	Color	Name
actuator 24 Vac	1	red	system potential 24 Vac
	2	black	system neutral
	8	gray	control signal 0...10 Vdc
	9	pink	position indication 0...10 Vdc

### Dedicated for ML6161E3029, ML6661E3028, ML7161E3028

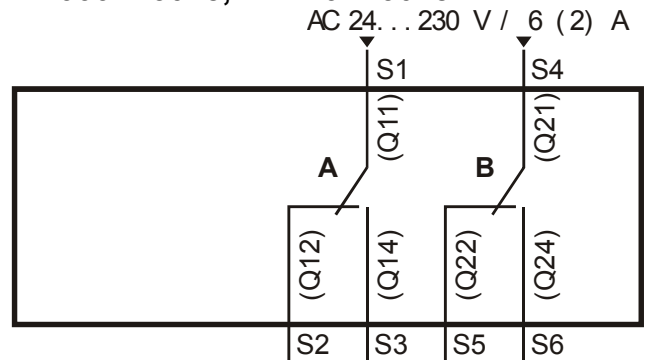


Fig. 5. Wiring

Table 4. Wiring of ML6161E3029, ML6661E3028,  
ML7161E3028

Cable	No.	Color	Name
auxiliary switch	S1	gray/red	switch A input
	S2	gray/blue	switch A norm.-closed contact
	S3	gray/pink	switch A norm.-open contact
	S4	black/red	switch B input
	S5	black/blue	switch B norm.-closed contact
	S6	black/pink	switch B norm.-open contact

## DIMENSIONS

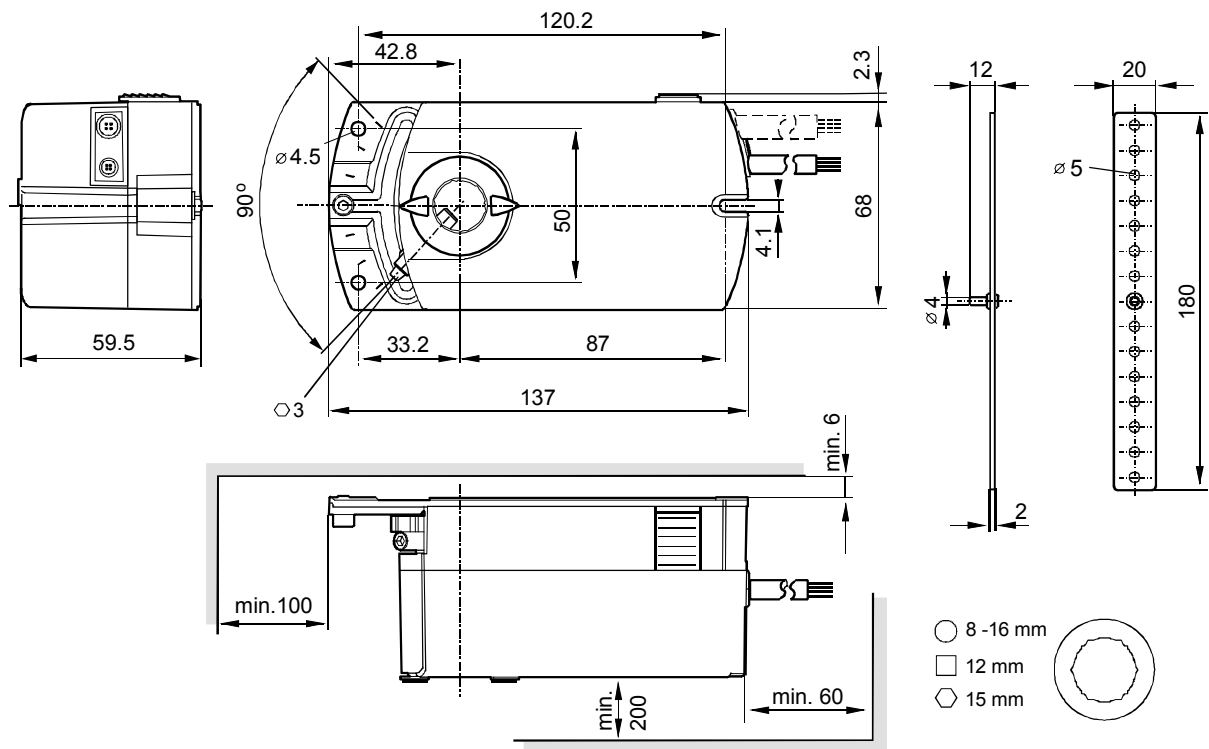


Fig. 6. Dimensions ML6161E3/6661E3/7161E3 in mm

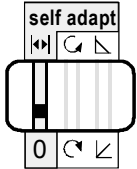
## Modulating Actuators Switch Settings

### DIL Switch Settings

The following functions can be set and thus require checking.

- **DIL switch 1:** Self-adaption can either be ON or OFF.  
Self-adaption

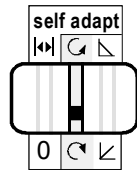
Factory setting: Self adaption OFF (0)



- **DIL switch 2:** Rotational movement direction

The rotational movement direction must match the desired damper movement direction (clockwise or counterclockwise)

Factory setting: Clockwise direction (↻)

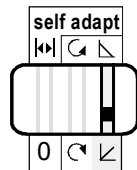


- **DIL switch 3:** Output voltage operating function for position indication

The line of action for output voltage U of the electrical position indication can be selected independent of the rotational movement direction.

The following variants are possible:

Rot. Movement Direction 0...90°	DIL Switch Position	Output Voltage U
↻	↙ non-inverted	0...10Vdc
↻	↘ inverted	0...10Vdc
↺	↙ non-inverted	0...10Vdc
↺	↘ inverted	0...10Vdc



**Non-inverted operating function (↙)**

$$Y_s = 0...100\% (0...90^\circ)$$

$$U = 0...10Vdc$$

- **Factory setting**

**Honeywell**

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